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ANAESTHESIA IN GENERAL PRACTICE*

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It is necessary for me to say at the outset that I intend to approach this subject entirely from the point of view of the general practitioner, from the point of view of the doctor who is called upon to administer an occasional anaesthetic, rather than from that of one who, as a result of having access to a hospital or to a clinic, acquires a degree of skill and experience born of long practice.

There is no gainsaying the fact that it is only when a practitioner is actually faced with an administration that he comes to realise that those long and tiresome examinations and courses the successful negotiation of which have entitled him to add certain letters to his name, have equipped him but poorly in this behalf. It is also then that the practitioner feels with bewildering force, the absence of that protection, which work in a fully equipped hospital affords and which he is apt to take for granted until he finds that he is thrown entirely upon his own devices.

This state of affairs is no doubt in a great measure due to the almost negligible opportunity that the enquiring student has to learn the general standard methods of anaesthesia. As a student he is supposed to administer the prescribed half a dozen or so cases, which not unnaturally are of the most trivial kind. Even as a House-Surgeon his opportunities are limited to the routine cases only, because the Surgeon is quite justifiably not happy, unless

* *Lecture delivered at the South Indian Medical Union.*

the administration is in the hands of the specialist in every case which is the least bit out of the ordinary. Another factor is the needless mystery with which this branch of medicine is attempted to be shrouded, an attitude which manifests itself in such statements as "an anaesthetist is born and not made" and similar ones. Who has not noticed the knowing look which had accompanied the answer to a query such as "How do you know, Sir, that the patient is deeply under ?"—"Oh ! you just know it after some practice".

The result of all this is, that the more bold and reckless of them who have noticed the easy familiarity with which the aneasthetist has handled his drop bottles and other inpedimenta, are apt to attempt to tackle cases which one can only approach with caution except at one's peril, while the more timid and anything-for a quiet-life sort of person, whose memory has perhaps been somewhat forcibly impressed by an "accident" or "a very near thing," is apt, quite unnecessarily, to make a mental vow "for me death rather than the having to give an anaesthetic". Between these two extremes are the great majority of practitioners by whom the majority of administrations are undertaken and who, considering how little they have been helped in the acquisition of knowledge of this branch of medicine, usually make a very good job of it.

On the other hand, anaesthesia has made rapid progress in recent years, mechanisation of apparatus, premedication, rectal, intravenous, spinal and regional anaesthesia have to a considerable extent replaced the simpler inhalational methods of former times. It is not possible, or reasonable to expect a practitioner to keep abreast of these improvements, nor would he be a good businessman if he should invest on costly apparatus which is likely to be requisitioned only once in a way, for as often as not this would just fail to function in an emergency, as nothing suffers more from "disuse atrophy" than the valves, rubber bags, connections etc. in which these machines abound.

From the point of view of the General Practitioner therefore, the method to be adopted should combine a minimum of equipment, 100% safety, tolerable ease of administration and must not be very expensive.

Only five groups of anaesthetics satisfy all or most of the above requirements. They are : (1) The Lipoid solvent drugs—Chloroform, Ether, mixtures of the above two substances in different proportions, Ethyl Chloride and the new drug Vinesthene or Divyal Ether. (2) The intravenous barbiturates, (3) Spinal analgesia, (4) Local analgesia and (5) Rectal Ether and Paraldehyde.

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Avertin is so costly, and the gaseous anaesthetics Nitrous oxide and Cyclopropane involve the use of such special apparatus that they are outside practical politics for the general practitioner.

The equipment necessary in the case of all the inhalational anaesthetics are:

(1) An adequate supply of the anaesthetic drug. This would appear to be so axiomatic as to make it seem almost too ridiculous to be mentioned: however, one has only to experience once the annoyance of realising that one has run short, during an administration, to realise its importance. The importance of using only fresh anaesthetic drugs manufactured from firms of repute, and to prepare mixtures fresh, cannot be over-rated.

(2) A tongue clip—sterilised,

(3) A box-wood mouth gag,

(4) Throat swabs,

(5) A face-pad and a mask of suitable size of the Schimmelbusch type covered with 8 to 12 layers of thin clean gauze. This gauze should be discarded after each administration and the metal frame of the mask washed and wiped dry before being stowed away.

(6) A sterile 5 c.c. record syringe with an extra long needle,

(7) Ampoules of various analeptic substances as Adrenalin, Coramine, Lobeline etc.

(8) A suitable drop-bottle.

It is superfluous to enlarge on the actual methods of administration and so on, or upon the "incidents" that may be expected as these are all well known and adequately described in all text-books. I would like to mention a few words regarding the following points only:

(*a*) The administration of pure Chloroform has practically completely gone out of vogue at the present time. It is practically never used except where endoscopy or the use of a cautery prevents the use of pure ether or of mixtures containing ether, the vapour of which is highly inflammable.

Chloroform produces a pleasant and very quiet anaesthesia. These desirable qualities may be advantageously made use of in certain select cases of high blood pressure, aneurysm and of patients with tendency to haemoptysis etc. It must however be constantly borne is mind that the margin of safety with chloroform is small.

(*b*) A new sign of full surgical anaesthesia has been recently pointed out. This sign called "chin retraction" or "tracheal tug" has been noticed by most anaesthetists, but the credit of adequatety describing the level at which the sign is noticeable, must be given to Dr J. U. Human.

The sign consists of a downward movement of the Larynx, with each inspiration. Where the movements of the Thyroid cartilage cannot be actually seen, the chin may be seen to move visibly and this latter is usually the case. Even in those cases where the chin does not actually move the tightening of the chin-depressor muscles can always be either seen or felt by the anaesthetist's fingers. The explanation of these movements is that the muscles which by their tonus hold the larynx in position relax under full surgical anaesthesia and each downward movement of the diaphragm draws the lungs down and with them the trachea and the larynx.

Chin retraction is more noticeable in closed anaesthesia with re-breathing.

(*c*) Certain signs of limited value have been described, of that pre-operative nightmare and post-mortem reprieve of all anaesthetists "Status-Lymphaticus", the existance of which as a clinical entity has been alternatively totally denied and minutely described by different pathologists.

These signs are:

(1) Sergents' white line —delay or failure of the skin to redden on lightly scratching with a match-stick.

(2) Orroyas' sign—Failure of the pupils to contract, on the instant that a light is flashed into the eye.

(3) Schriddes' sign—Prominent lymphoid follicles on the posterior wall of the Pharynx.

(4) History of cyanosis, convulsions and breath holding attacks.

Many of us would have noticed how certain weak children show a peculiar tendency when crying to emit a long cry followed by a complete absence of any further respiratory effort, the infant thereafter suddenly going blue and limp. Few mothers of such children would have failed to notice such phenomena and the eliciting of such a history may help to keep one on one's guard.

I wish to repeat however that all these signs are of limited value only and have a margin of error either way.

(*d*) Ethyl Chloride is essentially a short-action anaesthetic and can be administered without a bag. An ordinary mask, well enclosed in a thick towel, is placed on the face and a spray used tangentially to the mask so as not to penetrate on to the patient's face. 6 c.c. is a safe dose for an adult, although 9 c.c. have been administered on several occasions without any apparent ill-effect. The spray from a vial marked " for inhalation " should only be used, as there is also a less pure stuff supplied and intended to be used for local freezing only.

Masseteric spasm is frequent with this anaesthetic so that if a dental extraction or tonsillectomy is intended a mouth prop should be inserted prior to the commencement of the anaesthetic.

Anaesthesia may be prolonged if needed by continuing the administration with either mixture, or with ether.

(*e*) It must be borne in mind that all the lipoid solvent anaesthetics and more especially chloroform are protoplasmic poisons, are toxic to the myocardium and cause profound metabolic changes and are hence contra-indicated in all patients whose metabolism is already much deranged, as *e.g.*, in diabetics, in the jaundiced and in patients the subject of chronic nephritis.

(*f*) Vinesthene or Divyal Ether is a liquid and administered by the open method *i e.*, a drop bottle and mask. Its characteristics are rapid induction, fairly rapid recovery and adequate relaxation. It is a useful anaesthetic for short procedures requiring good relaxation *e.g.*, reduction of fractures and dislocation.

It is very much more expensive than either chloroform or ether.

The next great group of anaesthetics are the intravenous barbiturates —nembutal, peonocton Sodium Evipan, Pentothal Sodium and Evipal. Of these, the last three are the ones that have been most extensively used, and with minor differences the action of all three are closely similar.

Sodium Evipan is supplied in two packings. A 1 gm. packing and a 0·5 gm. packing together with distilled water ampoules of 10·5 and 5·5 c.c. respectively. The solution is made in the related ampoule with the respective amount of distilled water and it appears to be an advantage to prepare the solution some 20 minutes before its actual use.

The method of injection is fairly standardised. Venous entry having been assured, the first 4 c.c. of solution are injected at the rate of 1 c.c. per 15 seconds ; subsequent quantities being injected more rapidly at the rate of 10 seconds per c.c. There is no doubt that a pause at the end of say 2.5 c.c. is an advantage as the patient then tends to recover from the initial depression of the respiration and will cause less anxiety.

The onset of anaesthesia as indicated, either (1) by the patient ceasing to count if he had been previously so instructed, or (2) by a long drawn out yawn, is noted and as much again or twice as much again injected at the rate mentioned, in the case of short and long operations respectively. In the determination of the dose, however, no rule of the thumb such as the above can ever be a satisfactory substitute to a mature judgment, variation being necessary to suit individual patients. In old and enfeebled patients and in others where a very small induction dose alone has been necessary it is safer to inject only a further half of the original quantity.

A fall of blood pressure and a diminution of the amplitude of respiration are usual accompaniments and should not cause anxiety. The former may be an advantage especially in glaucoma cases. The latter should not require any special measure so long as the jaw is well supported and a tongue clip or airway is used and so long as the colour of the patient is satisfactory.

Jactational movements other than those indicating a dangerous degree of respiratory depresssion going on to cyanosis and asphyxia are not unusual during the actual injections and occasionally during the operation. Perivenous injection may result in the former instance and except that so much of the solution is lost in the tissues without producing any anaesthesia has no deleterious local consequences. Movements during the operation may be avoided to a great extent if the operation is not commenced until after the anaesthesia is well established.

The question of premedication for patients about to receive Sodium Evipan intravenously may be dealt with here. Although the administration of Morphia and other alkaloids of opium has been advocated and the advantages of such a procedure in reducing the dosage of Evipan required and prolonging its effect enlarged upon, my personal inclinations are all against this combining the action of two drugs, both known to be definite respiratory depressents and neither of which can be withdrawn after having been administrated.

The indications for the use of Evipan intravenously are in cases where an operation of brief duration is required especially when the doctor is single-

handed. It is a useful anaesthetic in operation on the eye, like operations for cataract, glaucoma etc.

Fits of sneezing have been described during evipan anaesthesia although I *myself have not seen it* and must be very *disturbing especially if* an eye operation is in progress. A peculiar case has been described of a patient who after a dose of 6 c.c. became very excited and was uncontrollable and created a pandemonium in the practitioner's surgery.

Among post-operative sequelae it must be mentioned that although many patients go off into a sound post-operative sleep, some 10% or so became restless and even violent to a degree requiring the use of sedatives and even morphine.

The next great group is spinal. Analgesia, which is at the present time enjoying much popularity in our hospitals and outside. The comparative ease of its administration, the perfect relaxation produced and the possibility of dispensing with the immediate presence of an anaesthetist and in a lesser degree the patient's own preference for something under which he can retain his consciousness have all contributed to this popularity.

There is no doubt that a spinal anaesthetic can be administered and an operation performed without the aid of a skilled anaesthetist in a variety of conditions ; but so many and alarming things may occur under spinal anaesthesia that where a laparotomy is involved at any rate, it is only fair to the patient to ensure the attendance of an anaesthetist skilled in spinal administrations.

Many varieties of solutions with diverse trade names have at various times been used and several claims have been made for them not all of them justified by results. This is due to the fact that the solution injected works according to well defined physical laws of Sp. Gr., etc., conditions which cannot always be standardised Besides the actual anaesthetising substance, chemicals to render the solution lighter or heavier than the C. S. F. have been added, like gliaden, glucose, etc., and corrective agents like strychnine, but for practical purposes only the following solutions may be considered.

(1) A 7½ per cent. solution of novocain in a 5 per cent. solution of glucose put up sterilised in sterile ampoules containing 3 c.c. The Sp. Gr. of this solution is about 1 080 so that it is very definitely heavier than C. S. F. The dose of this solution is from 1½ to 2½ c.c. depending on the level of anaesthesia desired and the duration Using this solution all operations on the gen.

talia, rectum and anus, the lower limbs, cystoscopy, operations for inguinal hernia, cystotomies and 1st and 2nd stage prostatectomy can be conveniently performed and a duration of aneasthesia of 1½ hours if not quite 2 hours can be obtained.

The glucose in this solution tends to discolor the solution with the lapse of time turning it into a dark yellow, but this does not appear to render the solution either deleterious, or have any diminished analgesic effects.

(2) Barker's solution consisting of 5 per cent. Stovain in 5 per cent. Glucose having properties and indications similar to the above. The dose is slightly lower.

(3) For laparotomies and all abdominal operation the above solutions, although they have been used with varying measures of success, are definitely less effective than the following solutions.

(*a*) A solution of 1 per cent. novocain in normal saline and put up in ampoules of 16 cc. each. The solution has a Sp. Gr. almost the same as C. S. F. and the dose is about 15 cc.

(*b*) A solution of 1/200 Percaine used as described by Pitkin.

(*c*) A solution 1 : 1500 Percaine in a 0·5 per cent. solution of common salt.

It may be mentioned here that percaine differs from the other novocain group of analgesic drugs in being a Quinoline derivative. It is about 25 times more toxic than novocain, but this is more than compensated for by the high dilutions in which it is effective, a solution as weak as 1/1500 or 1/2000 being effective. Moreover, the anaesthetic effect is very much more prolonged and whereas the effects of the Novocain group either locally or intrathecally rarely last longer than one hour the effects of percaine last 2½ hours or more. This advantage in the case of an operation likely to be prolonged is obvious.

The methods of using the above solutions and the phenomena that may be met with are now more or less standardised and it is superfluous to go into any detail regarding them.

I intend only to dwell on the method of using the 1/1500 solution of percaine in 0·5 per cent. solution.

This solution of which the dose is about 12 cc. can be used either by the technique perfected by Howard Jones or that more recently described by Etherington Wilson. In the Howard Jone's method the injection is made

with the patient in the lateral decubitus, the patient being immediately placed in the prone position for about 5-7 minutes with a small pillow under the upperpart of the chest, and placed on his back thereafter. This is not only a little wasteful of time but inconvenient and perhaps impossible in cases of large abdominal tumours etc.

To obviate the above and as a result of a series of experiments using glass tubes containing solutions approximating to the C. S. F. and injecting solutions at different rates and levels and following the rates of their diffusion Etherington Wilson described the following technique.

The patient is in the upright position and the injection is made in the 3rd space, 12 cc. of the solution being injected during a period of 40 seconds. The patient is immediately placed supine on the table and a 10-15° Trendelenburg position secured. This gives a level of anaesthesia corresponding to about the 5th Dorsal segment and is thus suitable for all abdominal work.

It must be said, however, that although this would be alright in most instances, the actual length of the spine is so important a factor that the method cannot satisfy that scientific accuracy which the author claimed for it.

The next group to be considered is local anaesthesia.

This method of anaesthesia requires a thorough knowledge of the anatomy of the part and is one which is stated to be much in vogue on the continent. There is perhaps no operation that has at one time or another not been performed or cannot be performed under local anaesthesia.

The following points may be mentioned in connection with local anaesthesia:

(1) Perfect sterilisation of all solutions, syringes and needles and the adoption of a rigorous aseptic technique is a sine quo non for all local anaesthetic procedures.

(2) Children and nervous females are as a general rule not suitable subjects and even in the case of adult males suitable premedication with morphine or omonpon should always be administered at least 30 minutes before the commencement.

(3) Inflamed parts are unsuitable areas for the injection of local anaesthetic drugs. Not only is the anaesthetic effect not maximal, but there is very real danger of metastatic complications.

(4) The total amounts of the solution injected should be carefully noted and as far as possible the following amounts should not be exceeded :—

2 %	Novocain	40 cc.
1 %	,,	80 cc.
0 5%	,,	200 cc.

(5) Accidental intravenous injection of the solution should be guarded against by keeping the point of the needle constantly on the move and aspirating from time to time especially in areas such as the neck where there are large venous trunks.

It must not be forgotten that novocain is poisonous in sufficiently large doses, the symptoms of poisoning being those of cardiac and respiratory failure as evidenced by a weak rapid pulse, a cold clammy sweat and an anxious facies. Treatment consists in the exhibition of Strychnine, Coramine, intravenous glucose and other analeptics.

(6) Adrenaline 1/1000 should always be added to the cold sterile solutions of the anaesthetic in the proportion of one drop to each drachm of the solution, the total amount of the solution not exceeding 1 cc. By its local vasoconstrictor action it renders the area of operation less vascular and by preventing absorption into the blood the anaesthetic effect is not only prolonged but there is less danger of rapid absorption causing toxic effects. Care should be exercised however in the case of terminal parts such as the fingers or the pinna especially in old people with enfeebled circulation in whom the prolonged ischaemia may be adequate to cause gangrene of the part

(7) No account of local anaesthetic methods would be complete without a mention Bohler's haematoma injection method for the painless reduction and immobilisation of fractures.

Advantage is taken of the fact that the fractured ends of bone are enveloped by a haemtoma within a few hours of fracture and this haemotoma remains fluid for at least 24 hours thereafter. By introducing into this fluid haematoma a 2 per cent. solution of novocain (this does not contain any adrenalin) the bone ends are completely anaesthetised, the protective spasm of the neighbouring muscles passes off and for as long a period as one hour the fracture may be freely manipulated without causing pain and reduction and immobilisation effected. As much as 30cc. of the solution may be utilised and entry into the exact spot of the haematoma should be ensured by aspiration, when blood should enter the syringe loaded with the anaesthetic solutions.

This is a very convenient method of reducing fractures, especially when one is working singlehanded, but its limitations must be carefully borne in mind. These are:

(1) An absolutely aseptic technique with assured sterility of solutions and syringes.

(2) The method should never be used in cases of compound fracture where the danger of introducing sepsis is obvious.

(3) It should not be used in children.

(4) A careful visualisation of the fracture should have been made in the first instance by the taking of one or more X-ray photographs. The importance of this cannot be over-rated. For example, in a Colles' fracture it is important to visualise the associated fracture of the ulnar styloid and inject the secondary haematoma here as well as the main one if the manipulations are to be entirely free from pain to the patient.

The last great group of anaesthetic procedures are the rectal methods of anaesthesia.

(1) Rectal Ether was first introduced in 1913 by Gwathmey in America more especially for operations for exophthalmic goitre. Neat Ether, which was originally used, sets up such a degree of inflammation of the rectum that at the present time a mixture of olive oil and ether in the proportion of 3 to 5 is used. The usual preliminary purge and enema is followed by a thorough good bowel wash until the washing come out quite clear and the oil ether solution is run into the rectum about 20 minutes before the commencement of the operation, slowly. The patient should have been placed in a darkened room and the ether can be detected in the breath of the patient within 5 minutes of commencement. The dosage is 1oz. of the mixture for 20 lbs of body weight. The patient is then wheeled into the theatre and the operation performed supplementing if necessary with a little open ether or by local novocain. Deep anaesthesia if noticed.can be lightened by fanning the patient and by the administration of CO_2 which favours expiration of the drug.

At the close of the operation the bowel must be thoroughly washed out until the washings are quite free of the smell of ether. By administration of an occasional enema in the days that the patient is awaiting the operation the ether enema may be made to appear to the patient only as a preparatory procedure and all idea of the operation kept away from the patient's knowledge. This is of the essence of the matter in the prevention of pre-operative psychic shock.

(2) Rectal Paraldehyde—the drug being administered as a 10% solution in saline in a manner similar to oil-ether solution. The dose is a drachm of the paraldehyde per stone of the body weight. It is a useful method in robust patients who would otherwise requre a large dose of an inhalational anaesthetic to obtain adequate relaxation and its use would *markedly* reduce the amount of anaesthetic that will be required.

(3) Rectal avertin for anaesthesia is mostly used in thyrotoxic cases and as has been said is so expensive that it is rarely that a general practitioner will have an occasion to use it.

It has however been used with some degree of success to control the spasms of Tetanus and a knowledge of the method of its use may be of advantage to the practitioner in that connection.

Avertin is put up as 100% solution of the drug in amyl alcohol so that each cc. of the solution consists of 1 gm. of the drug. The dose is calculated so as to work out at 0·08 to 0·12 gm. per kilogram of the body weight, the average being 0·1 gm. per kilo. The B. M. R. is so raised in thyrotoxic cases that the higher doses appear to be tolerated by them as the drug is quickly detoxicated by the qnickened metabolism.

A 2½ to 3% solution of the drug (this is the maximum solubility) in saline is run into the rectum in the manner described above. The solution is decomposed by heating and the temperature of the solution should not be raised above 40°C. A solution of 1 : 1000 congo red (which is supplied by the makers along with the drug) will change color if added to a solution of Avertin which has undergone decomposition and this test should always be performed before the solution is administered.

Avertin—chemically Tribrón-Ethyl-alcohol—is chemically closely allied to chloroform and like it is toxic to the liver and hence is contraindicated in jaundiced patients and in patients in whom there is reason to suspect impaired hepatic function.

A few words may now be said regarding premedication by which is meant the administration of some drug or drugs before the actual commencement of the administration of what may be called the main anaesthetic so as either to enhance the effect of the latter or counteract some of its deleterious effects.

To this class belongs the now practically routine administration of atropine in all cases which are to receive chloroform, ether or mixtures of

these. To obtain the maximum effects the drug must be administered in fairly full doses and at least one half hour before the actual commencement of the anaesthetic Atropine by paralysing the vagal terminals in the heart reduces the dangers of reflex vagal inhibition of the heart and fatal venticular fibrillation during anaesthesia, by reducing the amount of salivation there is less likelihood of obstruction to the airway by mucus in the throat and by the reduction of the amount of this anaesthetic laden mucus which is swallowed during recovery, it reduces the amouut of post-operative vomiting.

The alkaloids of opium with or without atropine may with advantage be used in all cases receiving spinal analgesia or local analgesia. The effect of a solution of morphine is greatly enhanced by its being dissolved in a 50% solution of Mag. sulph, the solution being so prepared that 2 c.c. of the solution contain ¼ gr. of morphine and 1/100 gr. atropine suph. The injection is made intramuscularly.

Synergism is the term applied to a combination of substances each so enhancing the effect of the other—such is the above solution of morphine in Mag sulph. solution—that minimal doses of each produce a maximal effect. This method of using a combination of anaesthetic substances has much to be said for it and is widely practised.

On the other hand, the danger of using powerful drugs in combination —especially when their administration is such that once given they cannot be withdrawn—must be constantly borne in mind especially when they all tend to depress some vital function. This "Cocktail" method as it has been not inaptly parodied, can be as devastating in its effects as the combined influence of the ingredients of a cocktail can be.

Before concluding, a few remarks may be made with reference to the question, " When should a practitioner call in a specialist" ?

Many different factors, such as the patient's wishes, his temparament, physical condition and financial position, the nature, site and severity of the operation, the skill of the individual practitioner and the amount of confidence which exists between himself the surgeon and the patient are all involved in arriving at an answer to this question.

Anesthetic risks so far as the individual patient is concerned may be discussed under the following heads :

(1) Age: infants are nearly always bad anaesthetic risks because they are often so frequently gravely ill before operation is decided upon. The only

trivial operation commonly performed in infants and young children—circumcision—is always accompanied by much shock.

The aged are only bad risks from the frequent combination in them of a serious operation and associated impairment of general health by arterio-sclerosis, impaired renal function, chronic bronchitis etc.

(2) With regard to physique, fat muscular and very large people call for a great deal more skill than is often realised.

(3) Sex: females are as a general rule easy subjects for general anaesthesia. Menstruation is no bar to an anaesthetic as such, except where the operation itself is barred—curettage, operations in the cervix perineum or vagina. Some girls are inclined to be more than ordinarily hysterical at these periods and operation should if possible be arranged in non-menstrual periods.

Pregnancy as such appears to be no bar. In fact there is a widespread belief that pregnant women are more than ordinarily tolerant to chloroform. Some women however miscarry on the slightest provocation and this happens most frequently between the 3rd and 5th months. In these, if a baby is much desired, it is wise to postpone operation. It must be borne in mind however that the year or so following a confinement is a most inconvenient time for a woman to undergo an operation. Conditions like sub-acute appendicitis which are liable to an acute flare-up are often best operated upon during pregnancy.

(4) With regard to that inponderable thing called temperament it is not possible to lay down any rule Whether a hysterical and nervous person would react better to the familiar presence of the family doctor or to the awe inspired by a stranger specialist who comes with a halo is a point essentially to be decided on the individual merits of each case.

(5) With regard to individual operative procedures: there is so little possibility of the general practitioner undertaking an anaesthetic in thyroid cases, operation on the central nervous system, genito-urinary and gastro-intestinal systems that it is not necessary to go into detail regarding them.

Generally speaking, upper abdominal operations, in whom adequate relaxation is essential for efficient work, require greater skill than operations on the limbs, head and neck which require a comparatively milder grade of anaesthesia. Operations on bones and joints other than reduction of dislocations and fractures do not require any deep anaesthesia. Contrary to what may be expected, operations on the brain do not require any high level of anaesthesia,

Operations on the spine and the kidney require a certain degree of skill by reason of the position the patient has to occupy on the table.

(6) Disease conditions as they effect the administration of anaesthesia.

Kyphosis, scoliosis, rheumatoid arthritis spondylitis deformans, torticollis and other structural abnormalities of the thoracic cage may so impair respiratory efficiency as to call for extra care and skill on the part of the anaesthetist.

With regard to heart disease, I cannot do better than quote Lewis. " The dangers involved in anaesthetising and operating on patients suffering from cardiac disease has been much exaggerated in the past. The entire question rests on the degree of compensation, the condition of the myocordium and the condition of the arteries. Where these are satisfactory, neither that mixture of irregularities grouped under the term, D. A. H. or actual valvular disease with the exception of course of aortic incompetence are an extra danger."

Regarding pulmonary disease, the presence of asthma emphysema, chronic bronchitis, tuberculosis and bronchiectasis should bring to one's mind the possible co-existence of myocardial disease as well as the risk of the anaesthetic precipitating an acute pulmonary lesion.

In the last analysis the practitioner should put to himself the question, " Have I the confidence of the patient, the Surgeon and myself ?" If the patient or his relatives show signs of desiring a specialist they should be never opposed. The Surgeon has a hard and exacting job and it is unfair to add to his worries by denying him a specialist if he shows any signs of wanting one.

REFERENCES.

L. Hewer :—Recent advance in anaesthesia and analgesia. II Edn.

Lukis .—Problems of anaesthesia in General Practice.

British Journal of Anaesthesia.

TRIDOSHA THEORY EXPLAINED

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THE PROPERTIES OF VAYU, PITHA, KAPHA.

1. *VATHA* is the same as Vayu Vayu is the same word as *Bios.* Bios means life. Compare Biology—science of life. Vayu similarly denotes life.

Take for instance, the working of an automobile engine, in which, there are essentially 3 systems. The sparking system is comparable to the nervous system in the human body. The power which gives the spark is comparable to Vatha. It is not the battery. It is not the wires, it is not the plugs, it is not the spark but it is the power, it is the unseen agent, which is comparable to electricity but it is not electricity. It is the power of life—Praana —that is what is understood by Vayu or Vatha. In the unicellular organism, it is the cellforce. It is Chaitanyam—or Kriya Sakti. It is a power similar to the one that is contained in a bit of magnetized iron and that is lost when the same bit is heated and demagnetized.

In the complicated human body, it represents the power behind both the central and the sympathetic nervous systems. Vayu is the leader of Pitha and Kapha, the bestower of power to them. Vayu has five divisions having different functions corresponding roughly to different nerve centres or plexuses in the body. 1. Praana in the chest, 2. Apaana in the Pelvis, 3. Samaana in the abdomen, 4. Udaana in the throat, 7. Vyaana throughout the body. They are like different Sub-stations in an electrical system receiving their supply from a common source.

The normal functions of Vayu are to cause Enthusiasm, to regulate Inhalation and Exhalation, the proper actions of speech, mind and body, the promotion of cellular activity, formation and protection of different tissues and the proper evacuation of excretary matter. In fact, it is Vata that is responsible for the birth of the child and for the maintenance of the human machinery. "Thantra Yantra Dharah."

Outside the human body, it is the universal force that regulates the movements of the Sun, the Earth and the Stars in their orbits. Vayu, the atmospheric air, is symbolical of Vata but not synonymous.

2. *PITHA* represents the combustion process in the automobile. In the human being, it represents the heat derived by the various biochemical processes that take place in the body. It is described as having five seats: 1. In the stomach, supplying the digestive fire. 2. In the liver and spleen, supplying colour to the blood. 3. In the heart, supplying intellect and memory. ("Hridavam Chethanaa. Staanam." Heart is the seat of all activities including those of the mind.). 4. In the pupil of the eye, supplying a power of vision. 5. In the skin, supplying the glow or lustre of the complexion. Pitha is comparable to heat, to fire, and to the Sun. If Pitha is less, the digestion will be impaired. The colour of blood will be altered. The mental faculties become affected. The sight becomes dim or perverse. The complexion becomes affected, pale if it is decreased and green or yellow if it is increased.

3. *KAPHA* represents the cooling system in the automobile, the water jacket and the lubrication. But for this system of lubrication, the engine will be overheated and will be burnt out. In the human body, the joints get dry, creaking, stiff and so on. There are five seats for Kapha also.

1. In the stomach, supplying the lubricant to moisten the food and to break it up. 2. In the Thoracic cavity, to prevent the heart from excessive friction or heat. 3. In the tongue, for the perception of taste and for maintaining the moisture in the tongue. 4. In the head, to lubricate the different sense organs connected with the brain. 5. In the joints, to keep them firm and to lubricate and protect different articulations. Kapha is comparable to the mobility and the coolness in water. The Moon is symbolical of Kapha.

Vatha, Pitha and Kapha Temperaments.

The temperaments of individuals are according to Ayurveda, attributed to heredity and environment of the embryo. The child is influenced by evolutionary changes due to time (Kala), the nature of fertilization and growth in the uterus, the food and habits of the mother and also by the constituent elements that make up the embryo, namely the Pancha Bhutas and the relative preponderance of Vatha, Pitha and Kapha temperament in the parents. These congenital tendencies are also classified into Vatha, Pitha and Kapha and combinations of these three temperaments. They are called the three Prakrithis of man.

Kapha Temperament.

People with Kapha temperament have a full and well nourished, oily, smooth, delicate and beautiful body with strong compact and steady limbs. They have profuse, black hair. They are rather slow in taking food and in

their habits and actions. They are steady in the gait and are less affected by hunger, thirst, heat and sweat. They have a clear voice and complexion. They are generally well educated, comparatively rich, strong and vigorous in sex life. They are generally calm and live a long life. Susruta considers that their temperament resembles that of a lion, horse, elephant, cow, bull, eagle or swan.

Pitha Temperament.

Those with Pitha temperament cannot generally endure heat. They are easily susceptible to hunger and thirst, have a tendency to the hair getting prematurely grey, to wrinkled skin or bald head. They may have also soft, delicate hair of a dull yellowish colour (Kapila) and moustache. They have keen appetite, eat well. They are generally very courageous and irresistible in battle, but they cannot endure much hardship. The muscles and joints are rather unsteady and loose. There may be a disagreeable smell in the armpits, mouth, head and skin. They are less virile. They are moderate in strength, general or scientific knowledge and also in their means of livelihood. Susruta says that their nature seems to resemble that of a serpent, owl, cat, monkey, tiger, bear, or mongoose.

Vatha Temperament.

People with Vatha temperament generally have their skin rough and dry and their bodies slender, have their voice rather low and indistinct. They do not have good sleep. They are predominantly raajasika in nature. They are talkative. They are quick to start any venture and suffer from a lot of worries. They are prone to fear, to be quick in love or hatred. They are quick in grasping things, but are also quick in forgetting. They cannot withstand cold, shivering or fits. The hair, moustache, nails, teeth, face, hands, feet and limbs are rough, brittle and easily cracking. The joints are creaky. Morally, they tend to be dishonest, jealous and thievish They are generally weak, have less children, and they are not flourishing either in health or wealth, because they are incapable of accumulating money.

According to Susruta, their nature seems to resemble that of a goat, jackal, hare, rat, camel, dog, vulture, crow or ass. (Susruta Sareera, Chap 4.)

If these qualities are overlapping and mixed up, they are called mixed Prakrutis. Samaprakruti is a harmonious combination of Vatha, Pitha and Kapha temperaments. Those who have a particular Pakriti are easily susceptible to diseases having similar symptoms The Prakriti or temperament also of each individual is therefore to be studied before any diagnosis or treatment is effected.

The Western authors including the Greeks misunderstood the application of the three fundamental principles called Thridoshas and translated Vayu as wind—flatus. Pitha as bile and Kapha as expectorated Phlegm. It is wrong. These wrong translations have given rise to much misunderstanding of this science. These three—wind, bile and phlegm—are respectively the excretory products or debris (Malas) due to the action of Vatha, Pitha and Kapha on the tissues.

MATERIAL STATES OF VATHA, PITHA AND KAPHA.

In addition to subtle states described above and recognisable only by their physical physiological and psychological properties, Vatha, Pitha, and Kapha have their material and concrete states as well. In the material states they supply the nutrient materials required for the maintenance and growth of all the cells. According to Ayurveda, the human body consists of Nutrients, Cells and Debris.

DOSHA DHAATU MALAA MULAMHI SARIRAM.

The Doshas are nutrients, which surround each cell, penetrate into it and supply it with all the food material including oxygen.

The Dhatus are the cells and the federations of cells which we call tissues.

Malas are the Debris. The excreta *i.e.*, the metabolic wastes that the body has to get rid off.

The nutrients are classified into three *i.e.*, Våtha, Pitha, and Kapha. The tissues are essentially seven, Lymph, Blood, Muscle, Fat, Bone, Bone-marrow and Sperm (Germ cells), and the Debris are essentially three, namely, Urine, Sweat and Stools.

The normal condition of all of these is required for the maintenance of health. When the equilibrium is disturbed, it is called disease.

What the average man understands by Vatha, Pitha, and Kapha, is the abnormal condition, which is predominant is Disease.

The purpose of the treatment, is first to remove the cause and secondly to purify the faults and to restore the equilibrium or the normal condition of the tissues. (Charaka. Bk. 3—7—34) If any one of the principles is in excess, it should be reduced and if in defect, it should be increased by supplying the necessary treatment by way of medicine, food or mode of living, suitable for the purpose.

How to recognise these three principles?

In Ayurveda, they have three sets of gunas or groups of properties of matter, by which Vatha, Pitha and Kapha are easily recognised even by the lay man. These are like sign posts or mile stones on a road. The Congress flag indicates encouragement of Khadder, removal of the evils of Drink and Untouchability and Hindu-Muslim unity. Similarly, the yellow of Pitha means burning sensation, heat, wastage of tissues, perverseness of appetite and so on. Just as the Congress flag is not the Congress itself, these symptoms are not Pitha in themselves but they are due to Pitha.

THE CLINICAL SYMPTOMS OF VAYU, PITHA AND KAPHA.

1. Vayu is dry, expanding in all directions like a gas, nonsticky, light, cold in action, penetrating, rough, active, exhibits astringent taste and light red or Aruna colour.

2. Pitha is slightly viscid, mobile (like liquid), nonsticky, hot in action, active, bitter, has smell of raw meat, and green or yellow in colour.

3. Kapha is recognized by being viscid, motionless (as in Solid), slimy, heavy, cold to touch and in action, inactive, soft, sweet and white in colour.

Sometimes one, two or the three principles may be deranged and overlap at the same time and then you get overlapping of the symptoms. Then, we say, Vatha Pitha are affected, Vatha Kapha are affected, Pitha Kapha are affected or all the three doshas are affected at the same time. It is the duty of the physician to recognize the various shades and combinations of the derangement and to offer the treatment accordingly.

The chief clinical symptoms by which deranged Vatha may be identified are cracking of the nails and soles of feet, dryness of skin, fissures and cracks at the hair roots, numbness or loss of sensation, pain, loss of function as in Paralysis or excess of function as in a catch, spasm, stiffness, or twisting of muscles, and distention of abdomen, drying up of secretions as in Constipation, Aneura, and furred tongue, tissue wastage, perverseness of functions of sense organs as in hearing exaggerated sounds or deafness, unconsciousness, loss of sleep (insomnia), fickleness of mind, shivering, yawning, prattling and all functional disorders attributed to derangement of the nervous system, etc. There may be an astringent taste in the mouth and light red colour, the colour of dawn. They are enumerated as 80 in number but may be many more.

The chief symptoms by which deranged Pitha is recognized are, a feeling of heat as if sitting near fire, as if burnt slightly or largely, a feeling as if smoke is coming out of the body, acid taste, thirst, internal burning of the body, excessive sweating, bad smell, thinning of blood or muscle, red patches, blisters or haemorrhage, yellow colour, jaundice, bitter taste in the mouth, smell of blood in the mouth, bad odour of breath, burning sensation in mouth, throat, eyes, and anus, giddiness, sight suddenly getting dim and yellowness of urine, eyes, stools and nails, etc. They are enumerated as 40 or more.

The chief clinical symptoms by which deranged Kapha is recognized are, a constant feeling of satisfaction as regards appetite, lassitude, excessive sleep, numbness, heaviness of body, laziness, excess of saliva, expectoration of mucus, increase in faecal matter, hoarseness of throat, loss of strength, a feeling of coating over chest, fulness in blood vessels, glands in the neck, stoutness of the body, loss of appetite, urticaria (itchy rash), white colour of skin, whiteness in urine, eyes, nails and stools, etc. These are enumerated as 20 or more.

SUMMARY.

The human body is supported by the three Doshas, seven Dhatus and three Malas. The three doshas are Vatha, Pitha and Kapha. The seven Dhatus are—(1) Lymph (2) Blood (3) Muscle (4) Fat (5) Bone (6) Bone-marrow (7) Germ-cells and three Malas are—(1) Faeces (2) Urine and (3) Sweat. Materially the Doshas are neutrients. The Dhatus are cells and federations of cells and the Malas are the debris.

Disease is due to any disturbance in the normal condition of the body by the increase, decrease or perverse condition of any of the above. The purpose of treatment is to restore the normal equilibrium. This is done by removing the cause and by the regulation of habits such as work, recreation and sleep or by the application of any method of treatment either by medicine, or food.

Enemas, Purgative and Emetics are the main agents for purifying the body. Of the three, Enemas are the best for mitigating Vayu, purgatives are the best for checking increased Pitha and Emetics are the best for checking increased Kapha.

Of the substances used in treatment, oil, particularly Castor oil, is the best for checking Vayu. Ghee and Sugar for checking Pitha and honey for checking Kapha.

The abnormality of Vayu is known by pain, dryness, and roughness of skin, Constipation, or Diarrhoea, Distention of abdomen, acute nervous symptoms, or loss of function. For instance, Hysterical fits are due to excited Vayu and Neurasthenia is due to decreased Vayu. Pitha is known by burning sensation, bitter taste, giddiness, acute nature of the disease, yellow colour of eyes, skin and stools. Kapha is known by itchiness, excessive watering in the mouth, mucus discharges, white colour of skin and stools, sweet taste and chronic nature of the disease.

Heating treatment is recommended in Kapha diseases. Cooling treatment in Pitha diseases and Soothing treatment in Vatha diseases.

Sweet, slightly acid and saltish substances check Vayu. Bitter, astringent, and pungent substances check Kapha. Astringent, bitter and sweet substances check Pitha.

The temperaments of individuals, the abnormalities in disease, the properties of drugs, of food materials and of habits are studied in this manner, so as to facilitate the treatment of diseases.

RANK QUACKERY

BY

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The latest addition of trickery employed by the numerous quacks and charlatans is the free and fearless use of curious and self made abbreviations (such as D. D. S., L D. Sc., etc.) of some "degrees" and "diplomas" possessed by them in order to pass off as dentists of qualifications and special training. One cannot over-estimate the harmful effects of such a procedure upon the condition of dentistry in this country.

India, presents a sorry spectacle when one sees the existing dental conditions. No dental schools; no Government legislation controlling the practice of dentistry; no dental associations worth mentioning; no dental clinics to educate and serve the people; swarms of quacks daily growing in numbers like mushrooms; hosts of untrained men against a handful of really qualified ones; suffering individuals needful of adequate dental treatment and advices being led to the alter of ignorance and maltreatment at the hands of untrained men only to be led into more suffering and sorrow—such, in brief, are the true conditions of dentistry in our country.

It should now be evident from what one can see about the progress made by the profession in advanced countries of America and Europe that in order to render efficient health service—which dentistry aspires to offer these days—it must be necessary to follow the system of education and adopt the regulations now in vogue in those countries. The apathy and indifference of the Government in the matter of providing facilities for dental education and in introducing adequate legislation for the control of dental practice have afforded unbounded license for the free growth of quacks. The people are not educated enough to discriminate between the good and bad, being easily victimised into all sorts of maltreatment thus bringing to themselves more suffering.

Individual efforts are too feeble to combat the evils which are fast gaining ground. In these days of wonderful progress we wish that the improved system of dental education and dental legislation would be introduced in the country in order to nip the evils in the bud. It is now high time that

the Government, the medical practitioners and the progressive dentists should take the cudgels of reforms in hand and begin to set the house of the dental profession in order. Given any further license, we shall be surely observing and experiencing the sad conditions of newer trickeries introduced and used by the quacks and charlatans who will drag the profession into the deepest abyss of confusion and degradation.

Needless for me to emphasize that the authors of these bogus degrees should put a stop to their stunt of making money in the interests of public dental health. We hope that the Government under the charge of an able minister in the health department will do something soon, to set matters right as he has done in various other matters.

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NOTES ON PUBLIC HEALTH.

(Issued by the Principal Information Officer, Government of India.)

THE YELLOW FEVER PERIL—DANGER FROM MONKEYS

GOVERNMENT VIGILANCE AT AIRPORTS

VACCINE SUPPLIES FOR EMERGENCY

The great development in air traffic which is bringing India nearer and nearer to those regions where yellow fever exists justifies the adoption of every possible precaution against the introduction of this dreaded disease into India, says the Public Health Commissioner with the Government of India in his latest Aunual Report.

There is no evidence that yellow fever has existed in this country either in man or in animals. But as the carrier of this disease from person to person or from animal to man is a domestic species of mosquito widely prevalent in India, and as two common types of brown monkeys of this country are susceptible to yellow fever, the consequences of an introduction of the disease into India will be extremely grave.

In certain parts of Western and Central Africa cases of yellow fever repeatedly occur. Recent developments in aerial traffic have placed this country within reach of these areas in 24—36 hours. The danger of an apparently healthy but infected person from one of the infected regions of Africa arriving by air in this country during the incubation period of the disease and then developing the disease here may be imagined. Further, infected mosquitoes may be brought in aeroplanes and may start an epidemic by communicating the infection to man and to such species of monkeys as are susceptible to the disease.

In recent years the peril of yellow fever spread by aircraft to countries hitherto free from the disease, has been increasingly recognised. Health authorities in the United States and in South Africa are particularly alive to such a threat. The International Public Health Office of Paris, on which the different countries of the world are represented, is the organisation which formulates international sanitary conventions to prevent the spread of infection from country to country. The Aerial Navigation Sanitary Convention has laid down that a person coming from an infected area cannot enter a country free from yellow fever, for six days.

AT KARACHI

In 1936 the Government of India issued regulations extending the period of prohibition to nine days, because India cannot afford to take any risks so long as there exists the free breeding of the carrier types of mosquito in different parts of the country, a vast reservoir of monkeys now known to

be susceptible to the disease and a human population without any protection against yellow fever. Passengers who are able to produce evidence of vaccination against the disease or of a previous attack of yellow fever are exempted from this restriction.

Karachi is the principal airport of entry into India for traffic coming from the West and steps have been taken to provide the airport with a health staff and to keep down the mosquito population to the minimum. Provision has been made for segregating suspected or infected persons arriving by air, a twelve-bedded mosquito-proofed isolation hospital having been built on the outskirts of the aerodrome. A mosquito-proofed ambulance is also available for the transference to this hospital of suspected persons arriving at the marine airport.

A powerful protective vaccine against yellow fever has been developed as the result of experiments over a period of years and this vaccine constitutes an important weapon in the campaign of prevention. An emergency supply of the vaccine is kept at the Haffkine Institute, Bombay, while arrangements are being made under which, at the Welcome Research Laboratory in London, 400 doses are earmarked for immediate despatch to India. Public Health and Medical Research Department officers from India, while on leave in England, can now obtain training in the method of inoculation at this Laboratory, so that should an occasion arise, an adequate number of trained officers will be available for an inoculation campaign among the people.

MOSQUITOS IN AIRCRAFT.

Prevention of introduction of yellow fever through infected mosquitoes carried in aircraft is of the utmost importance. Disinsectisation of all aircraft coming from suspected or infected areas has been in general practice for the last two or three years. Various insecticides have been used by different authorities, the one used in Egypt and India being a substance with a pyrethrum base. An efficient insecticide is of great importance to the country and no insecticide will be accepted until it has been submitted to rigorous tests by the Malaria Institute of India.

The Public Health Commissioner with the Government of India is in constant touch with the health authorities of Egypt and Anglo-Egyptian Sudan. With the opening of an air-route in 1937 between Lagos in Nigeria and Khartoum in the Anglo-Egyptian Sudan, which traverses the infected regions of Western Africa, the danger to India was enhanced. By continued contact with the Sudanese authorities, the Public Health Commissioner has satisfied himself that the latter are acutely alive to the necessity for taking all possible precautions against the introduction of yellow fever into that country and its extension to countries such as Egypt, Iraq and India.

The Egyptian Quarantine Board has also carried out all necessary measures, including disinsectisation of aircraft, for the prevention of the spread of yellow fever to the north and east. By arrangement with the Government of India the Board issues certificates of disinsectisation to all aircraft coming from infected or suspected yellow fever areas which are proceeding to India. The Director of the Board sends a telegraphic warning to the Airport Health Officer, Karachi, should any passenger having left an infected or suspected yellow fever area proceed to India by air within nine days.

The change from land planes to sea planes has rendered control of aerodromes much more difficult It will be obvious that a land aerodrome can be kept free from *Aedes* much more easily than a marine airport. Moreover, private aeroplanes will without doubt become an increasingly important factor, as these machines have frequently no definite routes and may cross and re-cross infected areas without the cognisance of any health authority. Private aeroplanes may also intentionally or unintentionally enter India through airports other than Karachi, the authorised port of entry, and land in a place which is not equipped to take the necessary precautionary measures.

It may thus be seen that no insurmountable barrier has been or can be built against the introduction of the disease into the country. However, the Central Public Health Department is acutely alive to the grave danger of its introduction and is taking all the precautions it can against such a catastrophe.

PIONEER TUBERCULOSIS ENQUIRY

INVESTIGATIONS AMONGST JUTE MILL OPERATIVES

Danger to Children in Overcrowded Houses

A poineer tuberculosis enquiry undertaken by the All India Institute of Hygiene and Public Health, Calcutta, is in progress at the Angus Jute Mills, 23 miles from Calcutta, which employ 5,000 labourers from various parts of India. It is fortunate for the investigation that the mill possesses a good laboratory and a useful x-ray plant.

Two hundred and sixty three workers have been selected as samples from various departments of the mill (ten in number) and put to a thorough examination including physical, sputum and blood tests and chest skiagraphy. The previous life of the worker, the details of industrial life with age at entry, duration and nature of work, his financial status, housing and other relative points have been recorded.

About 1.9 per cent of the workers were labelled as " definite " cases of pulmonary tuberculosis, 5.3 per cent as " possible " cases and 59 per cent as " arrested " or healed lesions.

The "batching", "preparing" and "spinning" departments have been taken up first and so far 1360 workers have been tested and examined. Physical findings suggestive of pulmonary tuberculosis have been found in 48 cases Both exaggerated tuberculosis reaction and suspicious physical findings have been detected in twelve. Bronchitis has been detected in 224, jute-eczema in 126 and catarrh in 49 persons.

Overcrowded Dwellings.

Investigations including a survey of the house and its surroundings, the social customs and habits, income, general mortality and tuberculosis mobidity and mortality have been carried out in about 500 dwellings in barracks.

It has been generally noticed that rooms, which have seldom cross ventilation, are overcrowded, general sanitation is bad, and that many customs prevail which are likely to favour spread of infection, while the diet is inadequate and badly balanced.

The different processes through which the jute-fibre passes to be finally baled emit a large amount of dust. In order to determine the size and concentration of suspended dust particles, 144 samples from various departments have been examined A majority of the dust particles were below five microns in size.

Examination of Children.

About 221 children below 15 years have been examined and followed up since last year, bringing the total to 838. Owing to the difficulty of a home survey of scattered houses and of bringing the contacts for X-ray and other investigations and to certain unavoidable difficulties about X-ray service in the hospital, the progress has not been as rapid as was expected.

It is proposed to examine completely 1,000 cases before final deductions are drawn. As soon as the tubercular homes are surveyed, a study will also be made of a certain number of non-tubercular homes, if possible, for purposes of comparison.

In all, 110 tubercular homes containing 319 children, have been surveyed, of which 94 contained "open" pulmonary tuberculosis cases. Sanitary condition was bad in 56 per cent of the houses and 39 per cent of the houses were one-room tenements. About 49 per cent of the houses contained inmates with a low economic status, the average monthly income per head being less than five rupees. Nearly 56·7 per cent of the contact children lived in houses with bad hygiene conditions and 36·6 per cent in one-room tenements.

Out of 319 children, 196 slept in the same room with the patient who was the source of contagion. As the majority of cases belonged to the poor classes, no significant correlation could be found between the incidence of infection, morbidity rate and economic status.

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SEPTEMBER 1939.

OUR UNION.

In the introspection of one's own economic problems and in the preoccupation entailed by the international situation, the affairs of most medical associations are suffering for want of sufficient attention. The South Indian Medical Union has been no exception to this rule. But the South Indian Medical Union, whose stability should be a matter of fundamental importance if for no other reason but that it is an accredited spokesmen of hundreds of Medical Practitioners, certainly deserves greater support than is now being given. No competition spirit nor any unhealthy rivalry is ever exhibited in the mode of work of the Union, to the detriment of allied institutions. The work is being and will be carried on in a constructive manner with full co-operation of sister Institutions if such is forthcoming. The journal has always expressed the view that there is plenty of room and other institutions as well and as such no effort has been made to alienate the members of those societies into the fold of the Union. We dare say the same spirit is reciprocated. After all the objection is the same but the path taken is different—Why then cross!

Such of the stalwarts who are sticking to the old "ship" know the utility of tradition and would they ever sacrifice it! Often quality has to be preferred to quantity—Nevertheless let us remind our supporters that there is strength in numbers.

Further, it is an excellent opportunity for the younger elements in the Union to work this institution successfully and thus equip themselves with a possible medical "Swaraj". The essentials for achieving such a result, are:

(1) Exuberant energy.

(2) Sincerity of purpose.

(3) Abandonment of even the slightest traces of inertia.

(4) Abundant faith in oneself.

These virtues lie at times dormant and then to be gently coaxed to be exteriorised. Shall we consider the above few lines as gentle persuasions!